

2023年度

相洋高等学校入試問題

【数 学】（45分） <満点：100点>

- 【注意】 1. 解答に無理数が含まれるときは無理数のままでよい。
2. 解答に有理数が含まれるときは、帯分数の形で答えないこと。
3. 円周率は、 π とする。

1 次の計算をなさい。

- (1) $-3-8$
(2) $-2^2 \times 3 - 3 \times (-6)$
(3) $(6a^2b - 15ab) \div \frac{3}{2}ab$
(4) $\frac{3x+2y}{3} - \frac{2x-y}{4}$
(5) $(x+5)^2 - (x+5)(x-3)$
(6) $-\sqrt{27} + \sqrt{75} - \frac{2}{\sqrt{3}}$

2 次の問いに答えなさい。

- (1) 次の連立方程式を解きなさい。

$$\begin{cases} 3x+4y=15 \\ 0.2x+0.8y=2.6 \end{cases}$$

- (2) ある荷物の重さをデジタルはかりで計量すると、18.5kgと表示された。この数値は小数第2位を四捨五入して得られた値である。この荷物の真の重さを a kg とするとき、 a の値の範囲を不等式で表したものとして正しいものを次のア～エから1つ選び、記号で答えなさい。

ア. $18.45 \leq a \leq 18.55$ イ. $18.45 < a \leq 18.55$

ウ. $18.45 \leq a < 18.55$ エ. $18.45 < a < 18.55$

- (3) $x = \frac{1-\sqrt{2}}{2}$ のとき、 $4x^2 - 4x + 1$ の値を求めなさい。

- (4) 関数 $y = \frac{6}{x}$ で、 x の値が1から3まで増加するときの変化の割合を求めなさい。

- (5) あるクラスの生徒20人が冬休みに読んだ本の冊数を調べたところ、その平均値は4冊であった。この結果から必ずいえることを次のア～エから1つ選び、記号で答えなさい。

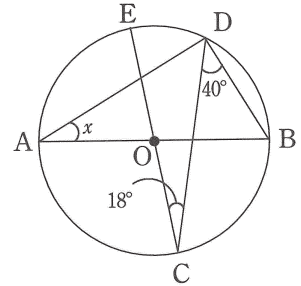
ア. 平均値以上の冊数を読んだ人は10人いる。

イ. 度数分布表に整理すると、4冊が含まれる階級の度数がもっとも多い。

ウ. 20人の生徒が読んだ本の冊数を多い順に並べたとき、多いほうから数えて10番目と11番目の冊数の平均値は4冊になる。

エ. 20人の生徒が読んだ本の冊数の合計は80冊である。

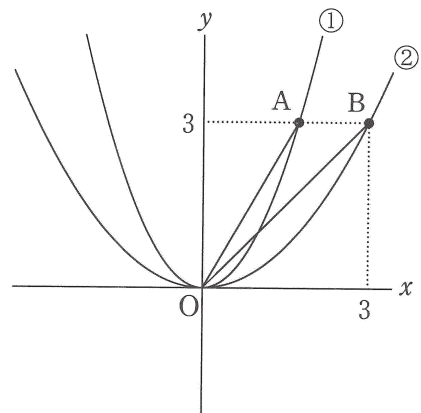
- (6) 右の図で、点Oは円の中心である。
 $\angle x$ の大きさを求めなさい。



- 3 右の図のように、放物線 $y = x^2 \cdots \textcircled{1}$ 上に点Aが、放物線 $y = ax^2 \cdots \textcircled{2}$ 上に点B (3, 3) がある。点Aのy座標は3で、x座標は正である。

このとき、次の問いに答えなさい。

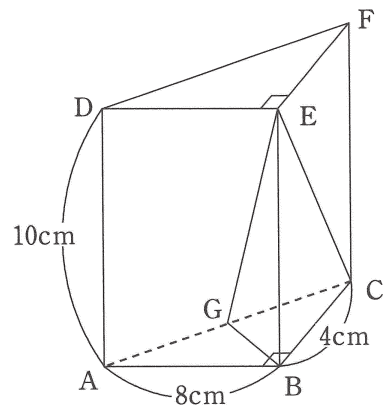
- (1) a の値を求めなさい。
- (2) 点Aの座標を求めなさい。
- (3) $\angle AOB$ の大きさを求めなさい。
- (4) y軸上に点Cをとり、 $\triangle AOB$ と $\triangle COB$ の面積が等しくなるようにする。このとき、点Cのy座標を求めなさい。



- 4 図のように、 $\angle ABC = 90^\circ$ の直角三角形ABCを底面とする三角柱ABC-DEFがある。AB = 8 cm, BC = 4 cm, AD = 10 cmである。辺ACの中点をGとする。

このとき、次の問いに答えなさい。

- (1) 三角錐E-BCGの体積を求めなさい。
- (2) 線分EGの長さを求めなさい。



- 5 袋Aには1から6までの異なる自然数が1つずつ書かれたカードが計6枚入っている。袋Bには17以下の異なる正の素数が1つずつ書かれたカードが計7枚入っている。袋A, Bからそれぞれ1枚ずつカードを取り出す。

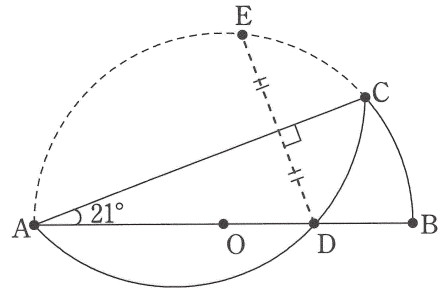
このとき、次の問いに答えなさい。

- (1) 2枚のカードに書かれた数の積が素数である確率を求めなさい。
- (2) 2枚のカードに書かれた数の和が素数である確率を求めなさい。

- 6 右の図のように、線分ABを直径とする半径が6 cmの半円Oの周上に点Cをとり、線分ACを軸にこの半円Oを折る。弧ACと直径ABとの交点をDとし、点Dと線分ACに関して対称な点Eとする。

このとき、次の問いに答えなさい。

- (1) $\angle AED$ の大きさを求めなさい。
- (2) 弧CDの長さを求めなさい。
- (3) この図形に関して誤っていることを、次のア～エから1つ選び、記号で答えなさい。
 - ア. $BC \parallel DE$ である。
 - イ. $AE \parallel OC$ である。
 - ウ. $\triangle CDB$ は二等辺三角形である。
 - エ. $\triangle CDE$ は直角三角形である。



【英 語】 (45分) <満点：100点>

I. 次の英文を読み、(1)~(5)の問いに対する答えとして最も適切なものを選び、その番号を書きなさい。

Have you ever heard of the phrase “gender gap”? It *refers to differences you find between men and women in areas such as *economy, *politics, *education, and health. For example, when men get more money than women for the same work, you can say there is a gender gap. There are many gender gaps in the world and people are trying to solve this problem for many years.

Do you know which country is the most *gender-equal country? Charts 1 and 2 show *Gender Gap Index by the *World Economic Forum. The score in the charts is from 0 to 1. If it is 0, it means men and women are not equal. If it is close to 1, men and women are almost equal. From Chart 1, you can see that Iceland *ranked first. It has been number one for more than 10 years. Finland is the second, followed by Norway, New Zealand, and Sweden. Many women work in politics in those countries.

How is the situation in the *Group of Seven (G7)? Have a look at Chart 2. Germany ranked 10th, the highest among the G7. The other countries didn’t enter the top 10, but France ranked in the top 20. Britain, Canada, and the United States ranked between 21st and 30th. The score of the United States was almost the same as Canada and the difference was only 0.003. Italy and Japan didn’t enter the top 50. Japan ranked 116th, the worst among the G7.

Why is the ranking of Japan so low? In Japan, there aren’t many gender gaps in the areas of education and health. However, you will find a lot of gender gaps in the areas of economy and politics. For example, the number of women who work *part-time is higher than that of men. Another example is Japan’s *cabinet today. There are not many women in it. Japan needs to make more efforts to *improve the situation.

Chart1 : Gender Gap Index 2022 < Top 5 >

Ranking	Country	Score
1	Iceland	0.908
2	Finland	0.860
3	Norway	0.845
4	New Zealand	0.841
5	Sweden	0.822

Chart2 : Gender Gap Index 2022 < G7 >

Ranking	Country	Score
10	Germany	0.801
15	(A)	0.791
22	(B)	0.780
25	Canada	0.772
27	(C)	0.769
63	(D)	0.720
116	Japan	0.650

The phrase “gender gap” and its ranking tell us how men and women are *treated in the world. If all men and women get the same chances and *rights, this world will be a better place. It may take time, but we have to keep trying to make it happen.

注) refers to を指す economy 経済 politics 政治 education 教育
 gender-equal 男女平等 Gender Gap Index ジェンダーギャップ指数
 World Economic Forum 世界経済フォーラム ranked 位置づけられた
 Group of Seven 主要7か国 part-time パートタイム cabinet 内閣
 improve 改善する treated 扱われる rights 権利

(1) What is the main point of the 1st paragraph?

1. There are many gender gaps in the areas of economy and politics.
2. The areas of economy, politics, education, and health are popular.
3. Gender gap means women are getting more money than men.
4. People have been trying to solve the problem of gender gaps.

(2) According to the passage and Chart 1, which is true?

1. The score of Iceland is the closest to 1 of all countries.
2. The score of Finland is twice as high as the score of Sweden.
3. Norway and New Zealand have the same score and same situation.
4. Sweden ranked the lowest because women don't work in politics.

(3) Choose the best combination to fill in the blanks in Chart 2.

- | | | | |
|---------------|-------------------|-------------------|-------------------|
| 1. A – Italy | B – France | C – Britain | D – United States |
| 2. A – France | B – Britain | C – United States | D – Italy |
| 3. A – Italy | B – France | C – United States | D – Britain |
| 4. A – France | B – United States | C – Britain | D – Italy |

(4) Choose the best answer to fill in the blank below.

Japan needs to () to improve its situation.

1. have a more gender-equal environment in the area of education
2. have more women who work part-time than men
3. have fewer women who work in Japan's cabinet
4. have a more gender-equal environment in the areas of economy and politics

(5) What is the best title for this passage?

1. Gender gap – a secret of Iceland
2. Gender gap – a ranking of the G7
3. Gender gap – a problem we need to solve
4. Gender gap – a world with men and women

Ⅱ．次のスピーチを読み、(1)～(5)の問いに対する答えとして最も適切なものを選び、その番号を書きなさい。

My dream is to become a *politician. I often check news and study about politics. Last year Mr. Abe, the *former prime minister of Japan, *passed away. Today, I would like to talk about what I learned about him and what are necessary to be a leader.

Mr. Abe is *well-known for two policies. One is *economic policy and the other is *foreign policy. Do you know the word “Abenomics”? The word comes from two words: “Abe” and “Economics”. He used this word to show his economic policy. It was based on three points — *financial measure, *fiscal measure, and *growth strategy. Thanks to these points, the economic situation in Japan got better. His words “from *saving to *investment” became popular and changed the way of thinking of Japanese people. We are now more interested in investment than before.

In his foreign policy, he built good *relationships with the leaders of many countries. In the past, Japan changed its prime minister every year. As a result, some countries did not trust Japan. However, Mr. Abe had a *long-term government, so he built good relationships with many countries. These good relationships and trust helped Japan to lead big international meetings. Japan *hosted many economic meetings, and finally, an economic *agreement called *the TPP was born among Japan and other 10 countries. The TPP helps the countries to *trade more easily. Now some countries like the UK and Korea want to join this agreement.

Through studying about Mr. Abe, I found that a leader needs to have two important things. One thing is to have a strong *belief. If you have a strong belief, your words will be powerful. And if your words are powerful, you can move many people. The other thing is to have good communication skills. You must build good relationships with people around you. Then, you can make many things or change things together. My dream is to become a politician. I will work hard to get these two things, and one day, I will make my dream come true. Thank you for listening.

注) politician 政治家 former prime minister 元首相 passed away 亡くなった
 well-known 良く知られた economic policy 経済政策 foreign policy 外交政策
 financial measure 金融政策 fiscal measure 財政政策 growth strategy 成長戦略
 saving 貯金 investment 投資 relationships 関係 long-term government 長期政権
 hosted 開催した agreement 協定 the TPP 環太平洋パートナーシップ協定
 trade 貿易する belief 信念

(1) What are Mr. Abe’s famous policies?

1. TPP and foreign policies

2. Abenomics and economic policies
 3. economic and foreign policies
 4. saving and investment policies
- (2) Why was Mr. Abe able to build good relationships with many countries?
1. He changed Japan's prime minister every year.
 2. He had a long-term government.
 3. He hosted big international meetings.
 4. He did not trust some countries.
- (3) Which is true of the TPP?
1. It makes trading easier for all countries in the world.
 2. It started among 11 countries after many meetings.
 3. It came to an agreement thanks to the UK and Korea.
 4. It was born after a few meetings to help Japan.
- (4) What does the speaker think are necessary for a leader?
1. good communication skills and relationships
 2. powerful words and a strong belief
 3. studying policies and a strong belief
 4. a strong belief and good communication skills
- (5) Which is true of this speech?
1. The speaker will be a good politician in the future.
 2. Investment is more popular in Japan than before.
 3. Leaders' words are always powerful in politics.
 4. Japanese prime ministers usually have a long-term government.

Ⅲ. 次の Asuka (アスカ) とイギリスからの留学生 Brian (ブライアン) の会話を読んで、(1)~(3)の問いに答えなさい。

Asuka: Did you watch the FIFA World Cup 2022? It was very interesting!

Brian: Yes, it was! Many Asian countries did their best. Do you *remember which countries came from the *Asian division?

Asuka: (①) Japan, Korea, Saudi Arabia, Australia. I think that's all.

Brian: Hey, you forgot the most important country! The *host country! It's in the *Middle East.

Asuka: Qatar! To tell the truth, I don't know much about football. Can you tell me more about the FIFA World Cup?

Brian: Sure. Do you know how many teams joined this time?

Asuka: (②)

Brian: It was 32 teams. 13 teams were from Europe, 6 from Asia, 4 from South America, 4 from North and Central America and the *Caribbean Sea, and 5 from Africa. In the next World Cup, the number of teams will

be 48 teams.

Asuka: Which country will host the next one?

Brian: It will be three countries, the USA, Canada and Mexico. It's like the World Cup 2002 Japan and Korea.

Asuka: We are 15 years old, so we weren't born yet at that time. I heard it was a big event and was very exciting. Brazil won that time, right?

Brian: Yes, Brazil is one of the best football teams in the world. Brazil has won the World Cup five times. It's the most in the history. Italy and Germany won four times. Argentina won three times. Uruguay, and France, twice. England and Spain, once.

Asuka: (③) Now, I'm searching the Internet for more about FIFA. Do you know which country hosted the first World Cup?

Brian: Let me see. Can you give me a hint?

Asuka: You said the name of the country just now.

Brian: Oh, it's very hard. Is it Brazil?

Asuka: No. It was held in Uruguay in 1930.

Brian: That's surprising! But Uruguay is also one of the strong teams.

Asuka: Well, I don't know where Uruguay is. (④)

Brian: It's between Brazil and Argentina.

Asuka: I got it. According to the Internet, the home country often wins the World Cup. For example, Uruguay in 1930, Italy in 1934, England in 1966, West Germany in 1974, Argentina in 1978 and France in 1998.

Brian: Have you heard of the phrase "home advantage"? The power of *cheers is really great. It gives the host team great energy.

Asuka: Yes. I remember the Tokyo Olympics 2020. Japan won the most gold medals in its history. By the way, speaking of the World Cup 2022 again, I watched the match between England and Wales. But both of them are from your country, right? Why are there two teams from one country?

Brian: (⑤) The UK has four teams, England, Wales, Northern Ireland, and Scotland. They joined FIFA as different teams. Rugby is also like that.

Asuka: Well, if they make one team, they can be number one in both football and rugby!

Brian: Haha! (⑥)

Asuka: I hope that Japan will host the World Cup again in the near future.

Brian: That would be nice! My dream is that the World Cup will be hosted by the UK, not just by England!

Asuka: Oh, hasn't the UK hosted yet?

Brian: We hosted it in 1966, but it was hosted only by England. Also, I want

to see the UK national football team!

Asuka: Cool!

注) remember 覚えている Asian division アジア枠 host country 開催国

Middle East 中東 Caribbean Sea カリブ海 cheers 応援

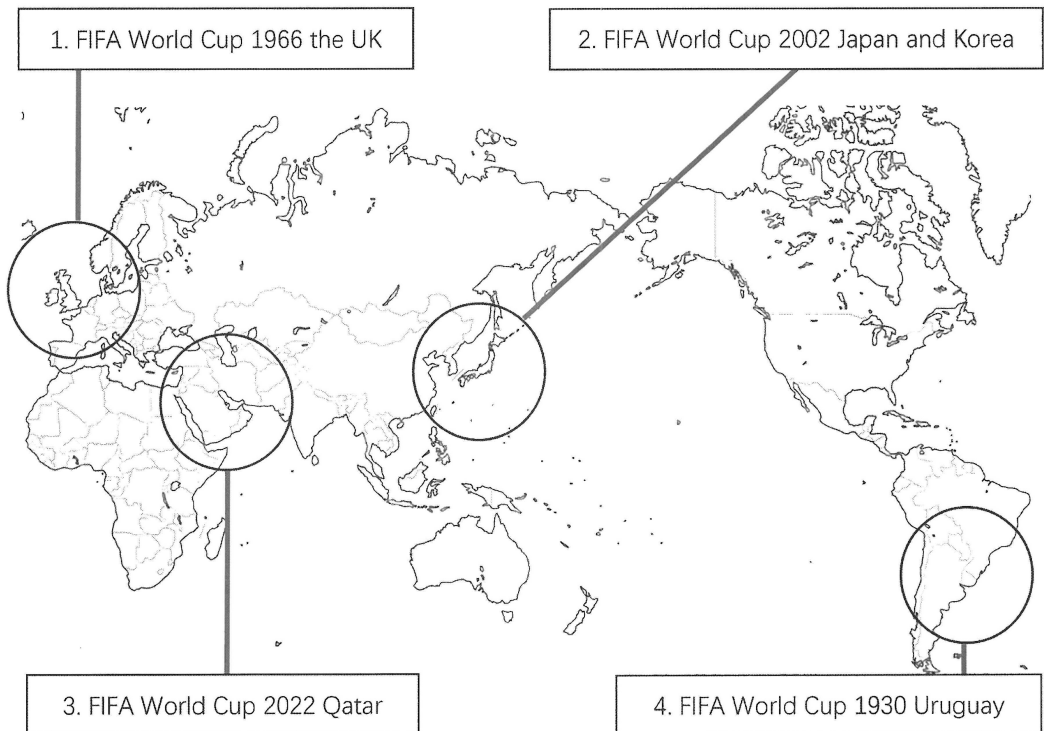
(1) 空所 (①) ~ (⑥) を補うのに最も適切なものを選び、その番号を書きなさい。

1. Let me explain. 2. Where is it? 3. It's easy.
4. I think so, too. 5. I have no idea. 6. You know a lot!

(2) 会話の内容と一致するものを3つ選び、その番号を書きなさい。

1. Asuka isn't interested in the FIFA World Cup at all.
2. In Asia, just Japan and South Korea hosted the FIFA World Cup.
3. More than 30 teams joined the FIFA World Cup 2022.
4. "Home advantage" means that the host team always wins.
5. England hasn't won the FIFA World Cup yet.
6. The rules of football and rugby are similar.
7. Asuka and Brian were born after 2002.
8. The UK sent more than one team to the FIFA World Cup 2022.
9. Brian doesn't hope that the UK will have one national team.

(3) 二人の会話から推測されるイラストとして、ふさわしくないものを選び、その番号を書きなさい。



IV. 次の英文の () に入る最も適切な語 (句) を選び, その番号を書きなさい。

- (1) A : Must I finish this homework by tomorrow?
B : No, you ().
1. weren't 2. mustn't 3. aren't 4. don't have to
- (2) A : Could you tell me () to buy for Tom's birthday?
B : He likes animals. A book about animals will be good.
1. what 2. how 3. when 4. where
- (3) Watching baseball at a stadium is very ().
1. excite 2. excited 3. exciting 4. excites
- (4) You'll get well () you go to bed early.
1. but 2. though 3. and 4. if
- (5) We went to Hawaii () the summer vacation.
1. between 2. when 3. during 4. while

V. 次の各組の英文がほぼ同じ意味になるように, () に入る最も適切な語をそれぞれ書きなさい。

ただし, 指定された文字で書き始めること。

- (1) (a) My father plays catch with me on Sundays.
(b) My father and I play catch (t) on Sundays.
- (2) (a) Nancy plays the piano well.
(b) Nancy is good (a) playing the piano.
- (3) (a) Will you tell me the way to the station?
(b) Can I (a) you how to get to the station?
- (4) (a) No one in my class can sing as well as Yuki.
(b) Yuki is the (b) singer in my class.
- (5) (a) Tom became sick last week and is still in bed.
(b) Tom (h) been sick in bed since last week.

VI. 次の各文が正しい英文になるように単語を並べかえ, (★) に入るものを選び, その番号を書きなさい。

- (1) Many people ()()() (★) ()() player.
1. as 2. smartphones 3. their 4. music
5. use 6. a
- (2) I ()()()(★) ().
1. old 2. is 3. don't 4. how
5. Tony 6. know
- (3) ()()()(★) () little bigger.
1. want 2. I 3. my 4. house
5. wish 6. a

(4) It's very hot today. ()()()(★)()() drink?

1. want

2. cold

3. do

4. to

5. something

6. you

(5) There is one ()()()(★)()() when you study abroad.

1. want

2. remember

3. I

4. to

5. thing

6. you